



Remote Monitoring System

Monitoring To Optimise The Performance And Life Of Electricity Distribution Substations

“Developing the KeLVN product for the Celsius project was a major step for Captec in the journey to providing easy-to-install monitoring and control for the electricity distribution industry.”

Steve Braithwaite,
Electronics Team Leader

As part of their Celsius project, Electricity North West Ltd working with Ricardo AEA, required the development of a battery-powered wireless monitoring networked system that could be easily deployed on live, remote substations to monitor temperature, voltage, current and power.



Requirements & Issues

- ▶ Non-intrusive and fast all-weather installation
- ▶ Easy sensor mounting
- ▶ Long battery life required in each unit
- ▶ Local radio connection from sensors to aggregation unit (Hub)
- ▶ Daily data reporting to central database
- ▶ Required to be physically robust
- ▶ Operate over a temperature range of -20°C to +85°C

The Solution

- ▶ Local low-power wireless network connects sensors to a wireless hub
- ▶ Units designed with magnet and cable-tie capability for easy sensor mounting
- ▶ Battery powered design of sensors and hub, with a minimum 3.5-year lifetime. Avoids need for mains power supply
- ▶ Unsteered GSM GPRS based data backhaul unit (Hub) with optimised cell site selection
- ▶ Temperature sensor designed to meet IP67 electrical enclosure rating and future-proofed for easy addition of new sensor types
- ▶ Local temperature, voltage and current data collection sensors use flying leads to measure volts and current



The Outcome

- ▶ 11,000 sensor points monitoring 520 substations installed for the customer
- ▶ Successful measurement tests over 3 years completed
- ▶ Learning and experience carried into the UKPN Active Response link box monitor and switch innovations project



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